REF:

Mattel MEMO

DATE: June 9, 1982

TO: Dave Chandler

FROM: Ronald M. Goldman

SUBJECT: Magnavox v. Mattel

You have been advised that the trial in which you are being called upon as an expert witnexx and fact witness will commence June 21 and may continue for 3-1/2 weeks, which, as you have noted, covers your long planned vacation.

Mattel will reimburse you for any deposits you may loose should you choose to cancel, or pay for the additional cost of travel, etc. should you choose to return on vacation on those days in which trial is not held. We will also reimburse your costs applicable to that portion of your vacation which you were not there present vacationing. Obviously, you will be entitled to retain any unused vacation time. We regret the inconvenience and appreciate your efforts and hope that you have an understanding spouse.

Regards,

RMG:ce

cc: Josh Denham
Stav Prodromou
Tim Reames

RECEIVED
JUN 10 1982
D. CHANDLER

(Whereupon, the witness left the witness stand.)

THE WITNESS: Exhibit 157 is a schematic diagram of the accused game, the Mattel Intellivision game, master component. It includes many components which we have already illustrated schematically in the block diagram which is contained in this -- I don't know if we need to bring that back out again, but we indicated a number of devices. There is a player control which are indicated over here. There is an RF modulator. These are devices which we clearly delineated. The output from this would be such that it can be connected to the antenna terminals of a receiver.

We indicated before a CPU, which is a microprocessor, which is in this particular circuit diagram a General Instruments 1610 microprocessor and it is this component.

Another component which we specifically identified was the so-called STIC chip also manufactured by General Instruments. That's indicated by this portion in the middle of the Exhibit 157.

BY MR. ANDERSON:

Q As Mr. Cook indicated, that means standard television interface chips.

A This works in conjunction with another chip called

check with Texas Instruments R

The position information, which is coded voltages, is interpreted by the STIC chip. The STIC chip creates a set of voltages on five leads, which working together with the color chip creates a set of voltages on four leads which are combined through a set of resistors to make the composite video signal.

There is an expanded version, a block diagram, semi-complete block diagram of the STIC chip, which indicates some of the important features. There is an item labeled --

MR. ANDERSON: The witness is referring to Plaintiffs' Exhibit 158.

THE WITNESS: Excuse me.

THE COURT: Surely.

THE WITNESS: There is block 1, which is maybe delete R described as an 8 x 8 content addressable memory cam.

There's a block next to that which is identified as a dynamic shift register and which has the number 6.

There is a block labeled No. 7 which is labeled as a moving object interaction matrix and on the lower portion there is a block labeled Y position 8 x 7 bit RAM maybe delete R which has the No. 2.

There is a block which is numbered 4

And so there has to be a decision made as to what is going to get presented at that particular spot on the screen.

There is a priority structure established for these eight moving objects and their relationship to the background object. And based on that priority scheme, the one that has the highest priority is the one the STIC chip presents, the highest priority that is asking to put a picture out.

Q Would you describe the relationship, if any, between priority and coincidence?

A You can probably do that better by putting up another chart here.

The chart that I have just put up is DX-E-11. A confidential chart which is a block diagram of the STIC chip that we have been talking about quite a bit. And let me identify some of these elements in the STIC chip that are relating to what we have just been describing.

THE COURT: And that is exhibit what?

THE WITNESS: That is Exhibit DX-E-11.

BY THE WITNESS:

A The block up toward the upper left-hand end, which is labeled 8 by 9 bit dynamic bit register, video data, is the set of shift registers that I indicated would have stored in it by the time the display line begins the eight pattern words for the eight moving objects that are involved on that particular horizontal line.

To the left of that block is the Content Address emory that I talked about, CAM it is called. And it con- ains the X position registers for the eight moving objects.

The register below it is the counter that is eeping track of the horizontal position of the display. nd any time there is a match between those two, there is n output on the corresponding line that says to the shift egisters, "Time to start shifting out your data."

It does shift out that data, and contrary to hat, the way this particular block diagram got drawn ould imply, these data streams that come out bypass the ext block, which I will talk about in just a minute, nd go on over to the display portion of the circuitry, splay selection portion of the circuitry.

The first part of that is a visible, invisible lock. It is possible for the computer to come in and set nformation in each of the bits that are associated with ach of the eight moving objects there, to indicate whether e want that object to be visible or not.

It is possible for us to describe an object t decide not to show it on the screen. And that's one the options that is in the system.

Beyond that then is a block that's the video iority block. And that is the block that picks the ghest priority signal that is currently present in

While we are discussing how this part of the
ates, let me go back and identify the fact that in
n the lower left-hand corner of the left-hand
he bottom of the DX-E-11 is the place where the
isters are stored, registers that the computer
desired Y position for the moving objects into.
used during the horizontal retrace times as the
e information to go out and get the correct line,
t word of information out of the graphics ROM or
AM so that it can perform the right functions.

Now, I have been sidestepping one of the
the system here and --

This is on DX-E-11?

That's still on DX-E-11.

And that's a box that's called interaction
And in order to -- before we get into that, I
need to talk some about what coincidence is.

To go back to DX-AH-7 for a moment, there's
discussion about coincidence and what's used to
when there has been an interaction between objects
sort of thing. And I guess I would like to talk in
what real coincidence is.

What I have on DX-AH-14 is a plastic sheet
ttle black block in it which corresponds in this
about the size of a ball in the baseball game.

ago. It is a device that has a characteristic that th inputs to it are high, its output is high. If r of the inputs are low or both of them are low, the t is low.

So not until you have an input from two different streams that at the same time exist in the high state, u get an output from that gate.

That's the essential detector of coincidence.

And what we do with it in our case is quite rent from what Baer and Rusch did.

We used the output to store memory in what we n interaction matrix. Interaction matrix is a set ht registers, each register has 10 bits in it. egister is associated with one of the moving objects. f the bits in that register is associated with one other moving objects; plus there is a bit for a ound object and a bit for a border.

And what happens here is if we get a situation ich there is a simultaneous presentation of being asked rom two different objects, it sets the bit in each e two moving objects that correspond; in other words, is the first two objects that are, they are simultan- y, it sets the second bit in the first register and irst bit in the second register and just leaves it there. othing happens as a result of it directly. The only that anything can happen from that is during the CPU time or sometime after that, it doesn't make any rence which.

When the CPU is coupled back to the STIC bus, go in and can read that register, if it wants to, ake action in computing changes in the projectory or er it may want to do as far as game play is concerned. ere is no automatic response to that kind of coincidence Would you like to describe in greater detail the ion of the STIC chip?

I think I pretty well covered the STIC chip . There is a tiny aspect that we probably ought to bout, and I think we can finish this up very quickly.

We have been talking about there being two te processors: The digital computer, which is the lay processor; and the display processor; pointing at the display processor inherently has to have things

BY MR. ANDERSON:

Q I think perhaps then what we should do is actually look at the STIC chip drawing and explain for the Court in a little more detail how the various hit and hitting symbols are produced on the television screen by the Mattel game, and if I may borrow Defendants' E-11.

Dr. Chandler, E-11 is a diagram of the STIC chip that is used in the Mattel games, is that correct?

A That's correct.

Q And it is correct that the STIC chip has the ability to store information about up to eight moving objects that are going to be displayed?

A That's correct.

Q So just for the sake of this explanation, perhaps we can assume that the first two, the object 0 and 1, which I gather would be the first two lines in all of these boxes here, are a hit and a hitting symbol, is that a reasonable --

A If you want to define that, that would be fine, yes.

Q Now, can you explain for us how the STIC chip takes the information that is in the X position moving object to the Y position and the video data blocks, which I understand describe or enable one to display a hit or hitting symbol, how that is taken and processed through